

April 2015

Seat Number

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खजिना - 023

CHEMISTRY PAPER - I : CH - 121
Physical & Inorganic Chemistry
(12135)

P. Pages : 3

Time : Two Hours

Max. Marks : 40

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Draw neat diagram wherever necessary. Figures to right indicates full marks.
6. Use of logarithmic table and non programmable calculator is allowed.

1. Attempt **any eight** of the following.

8

- i) The value of gas constant (R) in SI Unit.
 - a) $8.314 \times 10^7 \text{ erg degree}^{-1} \text{ mol}^{-1}$.
 - b) $8.314 \text{ Joule degree}^{-1} \text{ mol}^{-1}$.
 - c) $1.987 \text{ cal degree}^{-1} \text{ mol}^{-1}$.
 - d) $0.08205 \text{ Litre atm degree}^{-1} \text{ mol}^{-1}$.
- ii) The rate of diffusion of different gases at constant temperatures and pressure are inversely proportional to the square root of their.
 - a) density
 - b) Molecular weights
 - c) Viscosities
 - d) Both a and b.

- iii) The temperature at which real gas obeys ideal gas law over appreciable range of pressure is called.....
 a) Compressibility factor. b) Absolute Zero temperature.
 c) Boyle's temperature d) Vander Waal's temperature.
- iv) The Unit of Vander Waal's constant 'a' is
 a) $\text{atm L}^2 \text{mol}^{-2}$. b) $\text{atm L}^2 \text{mol}^{-1}$.
 c) atm L^2 d) atm
- v) Structure of NaCl crystal is
 a) Tetragonal b) Cubic
 c) Orthorhombic d) Monoclinic.
- vi) The existence of a substance in more than one solid modification is known as.
 a) Isomorphism b) Polymorphism
 c) Amorphous d) Allotropy.
- vii) The value of ionisation potentials increases in order.
 a) First < Third < Second b) First > Second > Third
 c) First > Second = Third d) First < Second < Third
- viii) The modern periodic table is given by....
 a) Mendeleev b) Einstein
 c) Bohr d) Mosley.
- ix) In a charcoal test, the mixture is prepared with
 a) NaCl b) NaHCO_3
 c) Na_2CO_3 d) MnO_2

2. Answer **any four** of the following.

8

- i) Define Root mean square velocity. Give its unit.
 ii) What is compressibility factor?

- iii) Define Heat of crystallization.
- iv) Explain Isotropic substance with example.
- v) Why zero group elements are chemically inert?
- vi) What are acidic and basic radicals?

3. Answer **any two** of the following. 8

- i) State the assumptions of kinetic theory of gases.
- ii) What is etch figure. Give the uses of etch figure.
- iii) The compressibility factor Z is 0.783 for methane gas. Calculate the volume of 5 moles of methane at 0°C and at 10 atmosphere.

4. Answer **any two** of the following. 8

- i) Explain, cation is smaller and anion is larger than parent atom.
- ii) Write a short note on common ion effect.
- iii) Write kinetic gas equation and deduced Avogadro's principle from it.

5. a) Answer **any one** of the following. 6

- i) Describe the Andrew's isotherm of carbon dioxide.
- ii) Explain the following properties of an element.
 - a) Electronegativity.
 - b) Electron affinity.

b) Explain plane of symmetry. 2
